

REMARKS

Applicant wishes to thank Examiner Bonzo for having indicated that claims 50 and 51 would be allowed if suitably amended. The Applicant respectfully wishes to reserve the right to so amend these two claims after agreement has been reached on some of the other claims.

The Applicant also thanks the Examiner for having rewritten the rejections under 35 USC § 112 with greater clarity and particularity. As will be explained below, however, Applicant maintains his traverse, and does so particularly based upon the MPEP passage specifically cited in the previous (April 8, 2004) Official Action, together with the caselaw explicitly cited in that MPEP passage.

Nonconsidered Document

In the Official Action (at center of page 2) it is said that item 1 listed in the August 2004 IDS was not provided — and that the item was accordingly "struck" from the list in PTO-1449. The Applicant apologizes to the Examiner for the unusual delay in locating a copy of the subject booklet, an Intel Corporation publication which evidently is out of print.

An academic colleague of the Applicant was able to find a copy — in only marginal condition — of the subject item 1, and that copy has been scanned to prepare the attached copy of the

referenced item 1. Applicant does not have access to any other copy.

Accordingly it will be understood that this copy is the best copy available. The Applicant regrets that the quality of this best-available copy is less than ideal. Nevertheless, as a copy has now been provided, the Applicant respectfully requests that the first entry in the previously submitted PTO-1449 be reinstated.

Duplicate Claim Objection

In the Official Action (near bottom of page 2) it is said that claim 48 is "a substantial duplicate of claim 43". Applicant respectfully traverses for two reasons, either one of which is believed sufficient to overcome the objection:

1) It is said in the Action that "it is proper after allowing one claim to object to the other as a substantial duplicate of the allowed claim." In the present case, however, neither claim has been allowed. Hence the objection is premature or moot, or both.

2) Claim 48 is actually not a substantial duplicate of claim 43; rather, the two claims have very distinctly divergent scope, as explained immediately below.

Claim 43 depends directly from claim 42, which expressly recites both that the invention is "Apparatus" and also that the "computing system . . . is distinct from the apparatus". In other words, it is absolutely explicit on the face of the claim that the claimed combination excludes the computing system.

Furthermore claim 48 depends from claim 47 — which express-
ly recites that the computing system is a part of the claimed
combination of claim 47. Accordingly the computing system is
likewise a part of the claimed combination of dependent claim 48.

The exclusion or inclusion of the computing system in the
claimed combination accordingly is diametrically opposite in the
two subject claims — viz., excluded from 43 and included in 48.
For each of the above-stated two reasons, Applicant therefore
asks that the "Duplicate Claim Objection" be withdrawn.

Rejections under 35 USC § 112, second paragraph

It is said in the Official Action (pages 3 and 4) that cer-
tain claims are indefinite because they include the word "sub-
stantially" in various contexts. First the Action points to a
seeming discrepancy between the recitation "exclusively hardware"
and the recitation "having substantially no software".

It is a well-known principle of claim construction, as well
as contract and statutory construction, that the specific con-
trols the general — i. e., here, that "substantially no soft-
ware" plainly controls the phrase "exclusively hardware". Thus
the phrase "substantially no software" is simply a qualification
to the definition of the hardware.

Nevertheless, in the interest of advancing this case toward
issue the Applicant has accommodated this first objection by
deleting "exclusively" from the recitation of the network. The
rejections continue, however, to concede expressly that the

Examiner is "confused as to whether or not [a] given element is permitted to have a software component. . . ."

The rationale of the rejection goes on, "How much software is permitted in a hardware element . . . ? The Examiner is unable to determine with any degree of certainty how much software in an element is permissible." All such questions, however, were answered in the Applicant's previous (August 2004) response, in which it was expressly pointed out that the assumption behind the April 2004 rejection was incorrect.

More specifically, the April 2004 rejection was explicitly based on an idea that the word *substantially* "is employed to allow for imperfections and impurities". As explained in the Applicant's August 2004 comments, this is seldom fully true and most often simply incorrect — since actually the word is usually used to prevent competitors from instituting trivial, i. e. insignificant, changes merely to cynically "get around" the claim language.

Furthermore the Applicant's August paper (at page 23) explained exactly how fact-finders at trial — whether jurors or judges — can go about determining "how much software is permitted" etc. It is also pointed out, in the August submission, that the findings can be illuminated by the testimony of experts as to the technological issues involved; and that it is often thus.

The arguments presented in the present Official Action fail to respond to the Applicant's cogent reasoning in the August 2004 amendment. Instead, the Action ignores that reasoning, merely saying again that "the Examiner is confused" and "unable to determine with . . . certainty how much software" is allowed.

Fortunately for resolution of this impasse, the April 2004 rejection did invoke specific authority for determination of such questions, saying:

"The frequent use of the word substantially . . . warrant[s] a citation of the MPEP concerning the use of this word. The excerpt follows."

The citation and excerpt indeed do follow. The citation is to "MPEP 2173.05(b) Relative Terminology". The cited section is then set forth in the body of the Official Action, and curiously begins with an approving characterization (emphasis added):

"The term 'substantially' is often used . . . to describe a particular characteristic of the claimed invention. It is a broad term."

These two observations about the word "substantially", especially when considered in combination, establish that (1) it is often used, even though (2) it is a broad term. These principles, established in the cited MPEP passage, are strikingly at odds with the objection to use of this word that is twice articulated in the present Official Action.

Thus the very breadth of which the Official Actions are complaining is expressly approved in the very portion of the MPEP to which "a citation" is said to be warranted. Even this contrast, however is not the end of the matter, because the cited MPEP section 2173.05(b) goes on to cite three cases (*Nehrenberg*, *Mattison*, and *Andrew Corp.*) that — on the face of the MPEP passage considered alone — are all approving, for a variety of different reasons, of the use of the questioned term "substantially".

With respect, it is difficult for Applicant to understand how the reasoning of the Official Action can proceed from such a

relatively positive overall *prima facie* instruction in the MPEP to such a negative overall conclusion on the subject terminology. A full analysis of this issue is rather lengthy (nine pages) for inclusion within the body of this paper, and therefore is appended following the signature page.

That analysis confirms what is already very strongly indicated by the MPEP discussions presented above — namely, that the subject rejections are without authority. Applicant therefore asks that the objection be withdrawn.

Section 112, fourth paragraph

In the Official Action it is also said (page 5) that certain of the Applicant's claims "fail to further limit the scope of the claims." According to the Action, the phrase "such computer system" of the subject claims "has already been claimed verbatim in the parent claim." The Action supports this assertion by observing that each parent claim:

"depends from a parent claim containing in the preamble: 'failure of a computer system.' Each parent claim then recites the failure in the body of the claim. As the failure is recited in the body of the claim, the descriptors from the preamble [breathe] life into the bodily recited limitation and warrant patentable weight."

It is true that language in preamble can impart patentable weight to an otherwise unpatentable combination. *Kropa v. Robie and Maltman*. The remaining assertions quoted above from the Official Action, however, are incorrect.

First, the "failure" recited in preamble is not part of the claimed combination, but rather strictly part of the environment, or context, of the invention. This is true on the face of the matter, since it is, in fact, recited in preamble. Even if this were not enough, it would be true in view of the express statement to that effect, in the specification (page 7, lines 8 through 16, emphasis in original):

"In the accompanying claims generally the term 'such' is used, instead of 'said' or 'the', in the bodies of the claims, when reciting elements of the claimed invention, for referring back to features which are introduced in preamble as part of the context or environment of the claimed invention."

Although this might seem to be absolutely unambiguous, in an excess of caution the same passage continues (emphasis added):

"The purpose of this convention is to aid in more distinctly and emphatically pointing out which features are elements of the claimed invention, and which are parts of its context — and thereby to more particularly claim the invention."

Thus, although it may be true that "descriptors from the preamble [breathe] life into the bodily recited limitation" — and it is surely true that they "warrant patentable weight," these propositions in no slightest way influence the present issue, namely whether the computer system or its failure are elements of the combinations — in the parent claims. Neither the computer system nor its failure is an element of the combination in the parent claim.

Even if these facts were not established beyond question on the face of the application as originally filed, they must be

regarded as established on the basis of their reiteration in the August 2004 amendment, and in the present paper.

Hence of course it cannot follow that the subsequent claims which refer back to those parent claims — but expressly add the computer itself into the claimed combination — are improper as failing to "further limit" the parent claims. This rejection is accordingly without authority, and the Applicant therefore asks that it be withdrawn.

Section 102 Rejection

In the Official Action it is said that certain claims are anticipated by Rasmussen. The independent claims involved appear to be 13, 42, 55, and 62.

In the Action it is said, with regard to each of these claims, that Rasmussen — at column 2, lines 14 through 22 — discloses the Applicant's claim-recited feature of "a network of components having terminals for connection to [the computing] system" to be protected. Although the cited passage does not mention any "terminal" for connection to a computing system, some points of connection between Rasmussen's various modules may possibly exist.

Rasmussen, however, discloses only a well-known "TMR" (triple modular redundant) system. Such a system contains several mutually redundant modules, which are essentially peers — i. e., are parallel in importance, authority and function.

The modules in a typical such TMR make decisions together by voting to determine whether any of the modules should be disqual-

ified from further participation. Thus in a very general philosophical or hypothetical sense it may be true that the modules are backing up one another to deter failure of an overall system.

This analysis has here been called "hypothetical" because, when Rasmussen's modules and TMR system are first constructed, it is impossible to say that one is the protected and others the protector: they are all parallel and equal. In other words, initially no particular one(s) of them can be identified as (1) a computing system to be protected from failure, vs. (2) a network of components to deterring failure of a computing system.

Such identifications can only, at most, develop later — when perhaps one of the modules fails, and the others then step in to prevent overall system failure by turning off or disqualifying that failed module. Perhaps it was this reasoning that led to the argument expressed in the Official Action, to the effect that Rasmussen anticipated Applicant's claims under discussion here.

The Applicant's failure-deterring "apparatus" of the questioned claims, however, is never parallel or equal to the computing system which it protects. ~~From their first construction, and~~ ever after, the protective apparatus is totally distinct in structure and function from the protected computing system.

No part of Applicant's failure-deterring apparatus is ever fungible or interchangeable with any part of his protected system. There is no situation in which the character of a component in Applicant's invention as either a protected or a protector component must be held in abeyance for revelation later.

Indeed, the claim-recited "computing system" of Applicant's invention — the system to be protected — may itself have plural redundant modules and may even be a TMR analogous to Rasmussen's.

In fact the Applicant's disclosure specifically discloses such a computing system: it is the "C-nodes" of the "outer ring", presented in the specification at e. g. pages 32 (lines 4 through 13), and 35 (lines 1 through 22), and associated Figs. e. g. 1, 4b and 8b.

Furthermore the "network of components", in the rejected claims, which deters failure of the "computing system" also may itself have plural redundant modules. In fact the Applicant's disclosure specifically discloses such a computing system: it is the infrastructure, primarily the "M-nodes" of the inner ring, which can vote to disqualify one of themselves from further operation, as presented in the specification at pages 32, line 14, through 34 line 5, and pages 37, line 12, through 51 line 3 — and associated Figs. e. g. 1, 2, 6 and 8a.

In Applicant's invention, these sets of units are structurally distinct from each other at the outset, and they remain so. That is, they retain their respective identities as protected and protecting subsystems from the moment of initial assembly, for whatever length of time the system thereafter exists.

These respective functional identities enable the two sets of elements to be endowed with respective properties that can then be exploited to make the Applicant's overall combined apparatus work for unprecedentedly long periods of time without human-maintenance intervention. Thus as examples the protecting subsystem can be made of ASIC hardware units, ultrahardened against radiation and thermal disruptions, and very specifically designed to perform only failure-detering functions, particularly to guard the overall protected system against failure.

These characteristics and capabilities confer a monumental benefit on the combined apparatus. In particular they are be-

lieved to enable apparatus so designed to operate safely on missions of several years' duration, or even of thousands of years' duration — as described in the Applicant's specification.

Rasmussen's invention entirely lacks such characteristics and capabilities. It is neither intended nor asserted to provide such service.

Based upon the foregoing discussion of all four claims that stand rejected under Section 102, the discussion below now turns to the four individual claims — now considered separately one at a time.

Claim 13 — Although these distinctions are believed to be inherent in claim 13 from the context, nevertheless in the interest of advancing this case toward issue, claim 13 has now been amended. The claim now recites that the protective network is constructed to be initially and permanently distinct from the computing system.

Furthermore claim 13 now recites that the computing system to be protected may optionally include plural modules which are ~~mutually redundant~~ — like Rasmussen's, for instance — and that if the system does have such redundant modules, then the protective system is distinct from all of those redundant modules. That is, it is not distinct from only some partial subset of that set of redundant modules.

In other words, claim 13 is believed to now unambiguously recite that the respective identities of the protected and protective subapparatuses cannot be fluid or interchangeable, as are those in Rasmussen's simple TMR device, but rather are fixed and immutable. Therefore Rasmussen cannot anticipate claim 13.

As noted above, all these now-claimed characteristics are plainly described and inherent in the Applicant's exemplary "in-

ner ring" M-nodes and "outer ring" C-nodes, with their respective associated A-node, S-node etc. structures. These details are discussed and illustrated in the specification — particularly at the passages previously identified.

Claim 42 — Original claim 42, unlike original claim 13, already recited that the system to be protected has plural computing channels and is distinct from the protective apparatus. Thus original claim 42 already was somewhat like the now-amended version of claim 13.

Original claim 42 could only be misread as reading on Rasmussen if it could somehow be supposed (again in a kind of hypothetical analysis) that portions of the plural computing channels of the system to be protected could somehow be interchanged fungibly with elements of the protective apparatus. The Applicant respectfully submits that such a reading would be very unnatural.

Nevertheless claim 42, too, has now been amended to make absolutely clear that the protective network is constructed to be initially and permanently distinct from the computing system — particularly including all the parallel channels. Thus Rasmussen cannot anticipate Applicant's claim 42.

Claim 55 — Original claim 55 specifies that the system to be protected has "plural processors". This is somewhat analogous to the optional condition that is now recited in the amended claim 13.

Here too the hypothetical possibility of interchangeability or exchangeability of the protected and protective elements is now negated, by amendment of claim 55. The claim now specifies that "the network is constructed to be initially and permanently distinct" from the computing system — and that phrase "the com-

puting system" includes all of the plural processors of that system.

Claim 62 — In this original claim the focus shifts to redundancy in the protective apparatus (network, or infrastructure) itself, rather than in the computing system to be protected. The original claim recites that the network has "at least three data-collecting and -responding modules, and processing sections for conferring among the modules to determine whether any of the modules has failed."

The theoretical possibility of exchangeability in this case is negated by amendment of the claim to recite that the network, including all of its modules and all of the processing sections, is constructed to be initially and permanently distinct from the computing system. This amendment, again, eliminates even the hypothetical and rather unnatural possibility that the selfsame group of redundant elements may make up both the protected and protecting equipment.

Rejection of Claim 25

Independent claim 25 appears to be specifically discussed in the Action only at page 9, within the last quoted paragraph of the claim. That discussion is within the portion of the Official Action devoted to Section 102 rejections, but the discussion does not appear to be of an anticipation rejection.

Applicant is unsure of the intended statutory basis of the rejection, but the claim is included in the list of rejected

claims that appears on the initial summary page. Therefore this claim will be taken up here, separately from all the others.

Claim 25 says that the computing system to be protected includes "at least one software subsystem for conferring resistance to failure". Claim 25 then goes on to specify that the protective apparatus has essentially "no portion that interferes with" that particular subsystem.

In the Official Action it is said, regarding claim 25, "No such interference is disclosed, and such interference would be contrary to the intent of the disclosure." The specification does, however, at page 14, line 19, through page 15, line 16, teach the subject matter of claim 25.


That passage specifically explains that this aspect of the invention "advantageously refrains from tampering with protective features built into the guarded system itself. The invention thus takes forward steps toward ever-higher reliability without inflicting on the protected system any backward steps that could actually reduce reliability."

As to the observation in the Official Action about "the intent of the disclosure," it will be understood that of course interference with a failure-resistance subsystem is not intended. Depending on the myriad possible particular characteristics of a failure-resistance subsystem, however, unintentional interferences can readily arise over the course of an extremely lengthy mission.

Conclusion

In view of the foregoing amendment and remarks, Applicants respectfully request reconsideration and allowance. In addition, noting the extremely high cost of continuing prosecution of this application — not only to the Applicants but to the Government as well — it is earnestly requested that, should there appear any obstacle to allowance of the claims herein, the Examiner telephone the undersigned attorney to try to resolve the obstacle.

Respectfully submitted,



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AUTHORITY ANALYSIS OF
WORDS SUCH AS "SUBSTANTIALLY"

This analysis follows after the preliminary comments presented in the body of the foregoing amendment, at pages 24 through 27. That preliminary portion deals only with the particular MPEP passage specifically cited in the April 2004 Official Action.

There is additional helpful guidance that must be pointed out here. First, a neighboring companion passage in the MPEP at 2173.05(b), part B, takes up a closely related term "Essentially". Interestingly, this passage too is favorable, citing *Marosi* — in which the court (emphasis added):

"further observed that it would be impractical to require applicants to specify a particular number as a cutoff between their invention and the prior art."

Hence clearly the ~~argumentation~~ in the current Official Action is striving for a degree of certainty ("How much software") that under the law is simply prohibited — not to mention ephemeral.

There is more: "Section 2173.05(b) Relative Terminology", while allowing a 112 rejection "when the scope of the claim is unclear" first sets out yet another approving principle for general guidance (emphasis added):

"[A]s a general proposition, broadening modifiers are standard tools in claim drafting in order to avoid re-

liance on the doctrine of equivalents in infringement actions"

A heading within this section states that the questions should be whether one of ordinary skill in the art (i. e., not the Examiner) would be "apprised" of the claim scope — and/or "whether a standard is disclosed".

Applicant's previously submitted remarks show that there is a standard, specifically related to understanding (by people skilled in the art) of the potential for designing-around the claims. The just-quoted MPEP section now links that standard to the very great importance of avoiding reliance on equivalents in case of infringement.

There is more yet: "Section 2173.02 Clarity and Precision" of the MPEP specifically instructs the Examiner to (emphasis added):

"allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness . . . even though the claim language is not as precise as the examiner might desire. Examiners . . . should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirement."

There is still more: the caselaw cited in the MPEP passage to which a citation was said to be "warranted" is also available for inspection and consideration. All of those cases will be discussed below; however, the most modern and therefore the most interesting and controlling is the previously mentioned Andrew case (CCPA 1988).

It is worth noting at the outset that on this issue the MPEP cites no decision more recent; thus Andrew may be regarded as the state of the present law on such questions. In this case:

"The district court held the Knop patent claims invalid, stating that terms in the claims such as 'approach each other', 'close to', 'substantially equal', and 'closely approximate' . . . were too vague to satisfy the requirement of definiteness stated in 35 U.S.C. 112."

The Applicant respectfully submits that the district court's holding just described will be immediately recognized and endorsed by the Examiner as a very close sibling to the arguments set forth by the two Official Actions in this present case.

The 1988 Court, however, sternly disabused the district judge of these incorrect holdings, scolding him thus (emphases added):

"The criticized words are ubiquitous in patent claims. Such usages, when serving reasonably to describe the claimed subject matter to those of skill in the field of the invention, and to distinguish the claimed subject ~~matter from the prior art~~, have been accepted in patent examination and upheld by the courts. As this court put it in <=12> Rosemount , [*2013] Inc. v. Beckman Instruments, Inc . , 727 F.2d 1540, 1546-47, 221 USPQ 1, 7 (Fed. Cir. 1984):

'Beckman attacks the claims as indefinite, primarily because "close proximity" is not specifically or precisely defined. As stated in the district court's Memorandum Decision, "to accept Beckman's contention would turn the construction of a patent into a mere semantic quibble that serves no useful purpose."'

Still reading along in Andrew: the Court observed (emphasis added) as follows.

"In W.L. Gore & Associates, Inc. v. Garlock, Inc., . . . 6 USPQ2d 1277, 1282 (Fed. Cir. 1988), this court stated that an 'imprecise claim limitation, such as the phrase "about 100% per second"' does not impart invalidity to the claims, but is to be considered in determination of infringement."

To that the Court of Customs & Patent Appeals added — notably including a citation to the United States Supreme Court (emphasis added):

"See also Hybritech Inc. v. Monoclonal Antibodies, Inc., . . . 231 USPQ 81, 95 (Fed. Cir. 1986) ('the claims, read in light of the specification, reasonably apprise those skilled in the art and are as precise as the subject matter permits. As a matter of law, no court can demand more'), cert. denied, 107 S.Ct. 1606 (1987).

This same Andrew case adduced still further very important reasons for permitting the use of "substantially" in combination with other modifiers. A pivotal passage relates to the lower court's theory for locating the boundary of the invention (emphasis added):

"The district court observed that the RPEs [critical parameters for purposes of the subject invention] change gradually with increased depth of absorber in the cone. The [district] court held that the claims must specifically delineate the point at which infringement starts"

This much may seem rational, and indeed corresponds rather closely to arguments presented in the two Official Actions in the present case. The CCPA, however, sharply rebuked the district court for this "erroneous theory".

Before coming to that rebuke, it is helpful to see how much further the district court's philosophies extended. That lower court had gone on, according to the CCPA, to say that (emphasis added):

"if such point [at which infringement starts] does not correspond to an unexpected change in properties, the claims are fatally flawed under 35 U.S.C. 112. The [district] court said: There is no unexpected change in the E-plane at any of the levels of absorber which gives a clue to what is intended by the patent claims. The choice of a point beyond which there is infringement, therefore, is arbitrary and the point unforeseeable."

It is plain from these excerpts that the district-court judge, beyond any question having the best of intentions, had been grappling earnestly with the fundamental concepts of what it means to claim an invention. In the abstract, the lower court's construction of a rational analysis for the point of novelty actually seems cogent.

Furthermore the CCPA in *Andrew*, still dissecting the lower court's analysis, goes on to show that the district-court judge had some precedent on his side (emphasis added):

"The district court held that the outer limit of the claim scope must coincide precisely with the point at which the claimed invention comes into scientific being. The court referred to *Brown-Bridge Mills, Inc. v. Eastern Fine Paper, Inc.*, . . . 217 USPQ 651, 655 (1st Cir. 1983), which quoted with approval the holding originating in *Kwik-Set, Inc. v. Welch Grape Juice Co.*, . . . 32 USPQ 104, 106 (2d Cir. 1936) that 'It is only where the selected [i. e., claimed] point corresponds with the physical phenomenon and the patentee has discovered the point at which that physical phenomenon occurs that the maintenance of a patent monopoly is admissible.'

Only after having established very, very clearly just exactly what the lower court's position was, and also how reasonable it was on its face, and how well supported it was, did the CCPA pounce (emphasis added):

"This ERRONEOUS theory would prevent a patentee from obtaining claims that do not coincide with, or claim less than, the EXACT point at which a change in the physical phenomenon occurs; it would require the patentee always to discover that point, no matter how prolonged or expensive the additional research; and would bar patent protection when the change is by nature gradual or incremental at its transition, whether or not it is unobvious in view of the prior art.

The Court thus showed how the district judge's seemingly reasonable philosophizing led inexorably to an utterly untenable rule.

In the following sentence the CCPA essentially distinguished the reasoning used in the European patent system, which requires that certain claims be written in a so-called "two-part format". That format requires that the claim begin with recitation which explicitly describes the closest known prior art, and then after a transitional phrase ("characterized in that") goes on to recite how the instant invention departs from that closest art.

The Andrew Court expressly disavowed such an old-world approach, saying (emphasis added):

"Patentability is not measured against the closest point on the road to invention. Much technological change that meets the criterion of unobviousness, when viewed in light of the prior art, has a fuzzy boundary [C]hanges may become manifest gradually. . . . A patentee may set the metes and bounds of that which is sought to be patented, and it is NOT material whether the phenomena just outside these claim limits are qualita-

tively different from that which is claimed. The patentee is NOT required to show that some technological discontinuity exists between the claimed invention and the subject matter just outside the claims, but only that the claimed subject matter would have been nonobvious 35 U.S.C. 103. The law imposes no obligation on a patent applicant to determine what is going on in the technological gap between the claimed invention and the prior art, or to set the claim limits at the precise technological edge of the invention."

Although Andrew is most recent and most clear on these issues, the other cases cited in the MPEP are also helpful. In Marosi the issue was whether the claim limitation "essentially free of alkali metal" satisfied the requirement of section 112, second paragraph.

The PTO's appeals board thought that this recitation was inadequate, explaining:

"We are well aware that the terminology employed in a claim does not stand alone but must be viewed in the light of the disclosure. However, even when the claims are read in this manner, we fail to find any disclosure in the specification that would tend to indicate just how much alkali metal could be present and still remain within the limitations set forth. Under ordinary circumstances, the disputed phrase would not form a significant part of the claimed subject matter; however, in the present case, it is the determining factor that appellants rely upon to distinguish over the applied prior art. . . . [N]owhere are we able to locate a teaching or disclosure that defines an upper limit that would create a patentable distinction over the prior art. As we find no adequate guidelines to the scope of the disputed phrase and in view of its importance in determining the scope of the claimed subject matter, we will affirm the rejection."

Objecting to this requirement (by the Board) for an explicit numerical threshold, the CCPA reversed — saying (emphasis added):

"Insofar as it requires appellants to specify a particular number as the cutoff between their invention and the prior art, the PTO's position is impractical."

With this last sentence the Court made a profound point, namely that patents are all about what is "practical" — and if lofty principle collides with what is "practical", it is the high principle that must often give way. The CCPA continued very simply (emphasis added):

"Appellants' invention does not reside in such a number."

In other words, even though some inventions may turn on a specific numerical threshold — in which case, that number should be set forth — not all inventions are like that. Those which are not, should never be forced artificially into the mold of the sharp-threshold inventions.

The *Marosi* court also explored another point that is particularly interesting for purposes of the present invention:

"The PTO's challenge is reminiscent of the argument advanced by the board in *In re Mattison*, . . . 184 U.S.P.Q. (BNA) 484 (CCPA 1975)."

The CCPA digressed to analyze the *Mattison* facts and decision, and then went on (emphasis added):

"As in *Mattison*, appellants have provided a general guideline and examples sufficient to enable a person of ordinary skill in the art to determine whether a process uses a silicon dioxide source 'essentially free of alkali metal' to make a reaction mixture 'essentially free of alkali metal' to produce a zeolitic compound

'essentially free of alkali metal.' We are persuaded that such a person would draw the line between unavoidable impurities in starting materials and essential ingredients."

Of course the character of a "general guideline and examples" depends upon the character of the invention under consideration. Thus in *Mattison* and *Marosi* all the chemical variations of interest were quantitative, and the general guideline and examples likewise were necessarily quantitative.

In the present case, by contrast, the variations of interest are intrinsically more qualitative — dealing with whether certain components are "substantially exclusively COTS", and so forth. Hence necessarily the guideline and examples in this case have to be qualitative.

In fact the guidelines and examples explained on this record are stated in terms of a competitor's deliberate efforts to design around the invention and escape the claim coverage — by cynically making only just some minor and otherwise-pointless change in characteristics. Applicant described this at considerable length in the previous response, and respectfully incorporates that extended explanation here.

People skilled in this field can determine and discuss such a guideline, and such examples, just as insightfully and accurately as the chemists in *Marosi* can determine whether, for purposes of the invention, something is "essentially free of alkali metal."

The one remaining case cited in the MPEP is *Nehrenberg* (Board of Appeals, 1960). There, the claims and teachings of two different documents (a patent application and a publication)

were being compared — and they both evidently defined their respective innovations in terms of phrases that included the word "substantially".

The Board was not fazed by thus confronting the overlap region between two criteria expressed in relative language, even though this was one of those cases in which both inventions were of rather quantitative character. Although the Board of Appeals did mention the particular impact of section-112 requirements in a crowded art, when finally coming to its decision the Board simply analyzed the operative limitations in the two documents, concluding —

"the broad term 'substantially' [t]aken in its accepted dictionary sense . . . embraces both [the Applicant]'s range and that of the [cited] publication."

Thus *Nehrenberg* came down, not on the permissibility of using "substantially" in a claim, but rather on the simple question of whether a specific claim thus couched could distinguish a specific prior reference. In other words, there was an anticipation or obviousness problem with the claim.

In view of the foregoing discussion of the MPEP passage cited in the Official Action (and also of other MPEP passages) — and also in view of all the decisions in turn cited in the cited MPEP passage, the Applicant respectfully submits that the rejections based upon use of the term "substantially" are without authority.